EUROLOGO'99

Proceedings
of
the Seventh European Logo Conference

Sofia
Bulgaria
22 – 25 August 1999

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EDITORIAL

EUROLOGO is a biannual conference, which focuses on educational applications of Logo and other exploratory computational environments for all levels of education. EUROLOGO'99 being held in Sofia, Bulgaria, from 22 to 25 August 1999 carries on the work of the previous ones in Dublin (1987), Gent (1989), Parma (1991), Anavissos (1993), Birmingham (1995) and Budapest (1997). Logo was born in the 20th century. What is Logo - language, philosophy? How did Logo ideas develop? How far has Logo theory and practice gone? Where is Logo facing? These questions will seek their answers at Eurologo'99, which is special with the fact that it is at the border of two millennia — *a 20th-Century Epilog and an entrance to year 2000.*

Logo gave rise of many ideas which deeply penetrated the education today when the power of the new Information and Communication Technology (ICT) is influencing human life and economy so deeply that makes all of us learners in a global learning environment both as individuals and members of real or virtual learning communities and learning organizations in a learning society. The computer literacy we targeted fifteen years ago is to be extended to a *multimedia literacy* related to the students abilities to *read, write*, and communicate with digitally encoded materials - text, graphics, still and moving images, animation, sounds. In this respect Logo and Logo philosophy were among the pioneers. Nowadays, with the advent of the networked multimedia and hypermedia, the educators started gradually reform the existing *print-based educational system,* which eventually would reside into an *ICT-based educational system*. As a subject of education we should consider not simply *a student, but a student equipped with a microcomputer*[1] *and even a student with an access to the superhighway and being a member of a global cooperatively learning community*. Along with *the textbooks* the students rely on *virtual electronic libraries and subject-oriented clearinghouses containing multimedia resources.* In an *electronic library based school subjects* all educational resource materials are accessible by students and teachers at any time and any place. *Learning to learn* and *critical thinking* are becoming important educational outcomes not only for the best students, but for everyone studying in an ICT-based educational system. *Cooperative learning*, as an alternative of the *competitive learning*, and *working on a project* - typical for Logo philosophy are accepted as a common practice in all levels of the educational system as an alternative of the instructive type of teaching. The ICT enables project teams working together independently of time and space. The teachers are given *higher degree of freedom* as the ICT allows them to work together across their classrooms and freely share ideas and experience. They could facilitate students' inquiry, manage their learning process, and help them navigate in a shared global information space where physically distinct locations could be joined into virtual classrooms, virtual workshop and reading rooms, virtual libraries and cafes, where students in different locations can meet and interact as if they were together face-to-face.

One very important idea behind organizing Logo conferences is to have a non-virtual access to creative people who know how to use technology. Here follow some proofs of this:

 Learning with Logo: Cognitive, cultural and cross-cultural aspects:

The idea that turtle graphics is an interdisciplinary area linking mathematical topics with computerized objects is well illustarted with some new aspects of turtle graphics in the paper of **Uzi Armon (Intrinsic procedures of intrinsic curve equations)** by showing how to ranslate any intrinsic equation of a curve into an intrinsic procedure to draw the same curve.
A study of the cognitive strategies applied by students solving problems in a Logo environment (**Marcourt, Logo and Cognitive observations**) suggests that contrary to the existing reports a subject can not be characterised by a given cognitive style once and for ever.

The ”no-threshold” idea behind Logo finds a new poof in the experience of a young mother wotking with her 3-yeqr old daughter on her lap (**M. Tomcsanyova, Logo programs for our 3 year old daughter Janka)**

The „no ceiling” part, in turn, includes among the numerous challenges the integration of the robotics in a holistic learning experience involving identity and moral issues. Such an attempt is has initiateda unique research program **(Marina Umaschi Bers, Caludia Urrea Con-scince: parents and children exploring robotics and values)** whose authors share their positive experience in engaging a community in building and programming artifacts to explore existencial questions as a constructive process.

 Learning by exploring, communication and collaboration:
As it is often heard among the Logo community *Whoever is doing the inventing is doing most of the learning and having most of the fun.* Thus one of the main goals persued by different authors is to apply a *learner-centered, constructionist approach to learning* - not only to develop technology but to develop their understanding how the kids learn by means of developing specialised Logo tools. A good example of this is **(S. Vaikakul, Childre’s use of Logo as a tool for Exploring their Ideas about Words**). In this work computer explorations serve a dual purpose – as evocative environments, supporting the children’s construction of linguistic knowledge, and as a research tool for mediating conversations with the children thus gaining more insight on their thought processes. Another important contribution in this direction is (U. Wilensky, Edmund Hazzaerd, Robert Froemke – GasLab – an Extensible Modelling Toolkit for Exploring Statistical Mechanics) in whcih the authors present a collection of connected StarLogoT models of gas molecules in a box. The authors conclude that by exploring these models, extending and revising them as well as creating new models, students can perform sustained scientific investigations and gain more insight about the poswerful ideas of statistical thermal physics.

 Methofology and Curriculum Design

At the Logo conferences it can often be heard that the real value given to Logo by Seymour Papert is not the programming language itself, but its underlying philosophy. This phylosophy is the driving force for a pedagogical movement that embraces all Logolike tools for creating interactive microworlds for developing or

refining problem solving strategies that could be applied to other tasks, whether computer-related or not.

The experience of the authors of these proceedings also shows that teaching in the sprit of Logo is really interesting, enjoyable and effective, the most important guiding principle being to say *may instead of must*. **(Karoly Farkas , Permanent Motivation in Logo).** The implementation of the Logo philosophy in a project-based learning could have significant implications in education as shown in (**Valentina Dagiene, Logo and Changes in Learning: Project-based Methodology).**

- **Classroom practices**

There is a general opinion that teachers are implementors of ready made curricula, teaching methods and software packages rather than designers or people who try out things. The experience shared by some authors in these proceedings show another, more optimistic picture.
Interesting classroom practices are reported in **(Y. Doppelt, U. Armon – Lego-Logo as an Authentic environment for improving learning skills of Low achievers),** whose authors talk about the tremendous change in the school life of low-achieving pupils working with a Hebrew version of Lego-Logo. Programming in their native language turned out to be of a great importance for gaining self-confidence and creating very sophisticated projects.
A sequence of didactical situations about ratio and proportion notions in an elementary school in Mexico is presented in **(D. Sevilla and P. Falcon – The frog's junps...)** The need of further analysis of the specific goals in a didactical study is emphasised on.
A new pedagogical approach based on Logo as a didactic tool in the context of teaching mathematics in a public school in Sao Paulo is presented in **(O. Sidericoudes, Logo integration into Mathematics classroom activities).**
Some interesting ideas how to overcome the problems of integrating the information technologies in the primary and the secondary school are suggested in [**N. Stoyanova – The students – the authors of the tasks**, **and The challenge to teach in first form]**
Variety of aspects of classroom practice within the context of generating innovation with the use of exploratory software (such as pupil collaboration, concept specific, teacher beliefs and practices) are discussed in (**Cronis Kynogos** , **Software developemnt, innovative practice...)**

- **Software environments and tools**

As often expressed by the Logo fans the idea of integrating ICT in the curriculum should not be to adapt them to the old things that have always exist but to let students set their new experiments and make their own instruments which is in harmony with the good traditions in science.
Many papers present interesting achivements in this direction: in **(G. Carpetti, M. Lagana, L. Ricci – Decentralised programming of communicating turtles)** the authors describe a new programming environment allowing adolescents *to learn a decentralised way of programmin*g.

To promote Logo in elementary and secondary school in Taiwan a Chinese Logo has been developed **(W. Wong, Chinese Logo ...)** alowing students to program completely in Chinese.

The developers of the well-known Comenius Logo introduce a new implementation of Logo Language and environment – Open Logo, which include elements of object oriented programming and means for publishing Logo projects on the Web**. (Blaho, Kals, Tomcsanyi, Open Logo – New implementation of Logo).**
The need to make the behaviour and the underlying structure of mathematical algorothms and models more trnasparent and comprehensible has inspired the author of Functional Machines to create a ne version of this a visual programming language for mathematics education, (**Wallace Feurzeig, Visualizing Algorithms**).

The importance of engaging young students has given rise to some new features of this version in terms of functionality and richly enhanced graphical user interface. In addition, the clarity the Function Machines representation brings to recursion, is illustrated.
The new complexity and challenge to the exploratory software community whcih perceive technology as a vehicle for qualitative educational development is considred in the context of multi- organisation projects by **Cronis Kynogos** in **Software developemnt, innovative practice...** The methodological issues discussed include the need of a special culture of explratory software designers, developers and users. The focus in the software they have developed is on a mathematical component (*the variation tool*), on a Logo component extending the traditional Logo to the tole of a scripting language and on a database in a component-oriented software architecture.
In his concluding remarks the author suggests that

The Logo–like community has deep understanding and vision of education and the ways it may qualitatively develop, supported with the integration of exploratory software in educational practice. For this to survive and flourish, we need methods of drawing out these and perhaps other problematic issues of collaboration, making them explicit and finding ways to fuel the convergence and synergy between very different communities of people.

- **Robotics: connecting the mind and physical reality**

The major barriers preventing the use of Logo in schools is directly related to the fact that there is not enough room for exploring the “powerful ideas” in traditional education. Teachers and students are so busy dealing with facts and information that they do not have time to work out important concepts about learning, creating, reflecting, and debugging.
The practical use of programming as a tool for learning, using the physical construction of mrchanical robots, planning and programming their behaviour, tackles a wide range of problem solving situations, not only at a practical, but also at a more abstract level **(A. Anov, Programming the behaviout og yourself constructed robot; Yves De Saedeleer, An approach to complexity: buildomg a robot; Lego-Logo as an Authentic....Y. Doppelt, U. Armon; Suomala et all, The Characteristics of High Quality...)**

The projects described by these authors show that a trial and error approach to problem solving provides an excellent opportunities for vreativity. They also demonstrate that Robotics is a very promising link between the mind and the physical reality.

- **Implementing the Logo philosophy with other software**

To take Logo's powerful ideas outside of the school realm is another interesting phenomen described in **(LOGO GOES TO WORK, José Armando Valente, Klaus Schlünzen Junior)**
The authors claim that the Logo learning approach has all the ingredients to help learners to develop skills such as reflecting upon results and debugging ideas, which are very important in the working place or in business. As part of a training program, they use the Logo aesthetic,
which involves *learning by teaching the computer* how to solve a particular problem (lean production techniques, in this case). The author emphasises that in the process of describing-reflecting-debugging the learners can execise their creativity, pull out the information needed, be critical about the results by the computer and develop debugging strategies for improving their ideas and actions.

- **Logo and the challenge of global communications**

In the European Community there is a consistent and explicit encouragement forcreating intercultural sensitivity and to generate good ground for global communications.
The project NETLogo: The Interactive European Educational Web Site is presented **in (D. Sampson et all, NETLogo: The European...)** whose key objectives embrace providing on-line educational software of exploratory nature alowing teachers to conduct their own experiments, communicate over the network and exchange information about open-ended educational environments.

Some aspects of Logo as well as involvement in related environments that possess educational potential and provide a tool for communications are considered in **(M. Turcsanyi-Szab, Logo Connections...)** To develop Logo connections for the benefit of learning both nation-wide as weel as on global international grounds is one of the goals of the persued by a reserach team represented by the author.

Some interesting educational applications of MSWLogo networking capabilities are considered in **(N. Zaversnik and V. Batagelj, Networking...)**

Micheal O Duill suggests interesting reflections on **Logo-like education for a biotechological species in ()** He introduces a new term (*logios)* to categorise the mode of thought that computer-based media demand.

If you want to change the world do it with kids!!! – this is one of the strongests beliefs not only among the Logo community. Since playfulness has alwayd been a central part of the children's Logo activities **C. Noyles and R. Noss** address the boundaries around the idea of playfulness and the way they are evolving in the light of more powerful technologies **(Playing with and without words).** They claim that programming makes play possible, and play is a central motor for creativity and

elarning. *While creativity means voyaging out and beyond the known and familiar, playfulness is based on the joy of recombining the known and familiar in new and unfamiliar way.* Theit aim is to create virtual playgrounds in which games will be built for learning or creativity. They exploit the cross-cultural dimension of their European project to make comparisons between the games, game creation and learning in different countries and context but nore crucially to motivate the children to share their games and to be more explicit when descirining their design. Their conclusion is *that in the new millenium we need new metaphors and tools which do for the design of playgrounds in general, what the turtle did so admirably in the nineteen-seventies and eighties for learning about shape and space.*

The message of Eurologo'99 might be formulated in harmony with the thought of S. Papert *to approach Logo as an idea in development, as a rich sources of ideas about where to go next*

Eto oshte edin gotin laf:
Thornburg:
Logo is one of the many wonderful tools for promoting the kinds of thinking that the learners will use for the rest of their life... "It has evolved and grown and spread and ppromoted the next exciting stages of educational technology and programming evolution."

The Olympic version of Eurologo'99 could be formulated as:

STRONGER, HIGHER, FASTER, WISER

LOGO IS THE BEST ADVISER!!!

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TO EUROLGO'99
OUTPUT SE [LOGO IS] PICK [JOY PLAY FRIENDSHIP CREATIVITY WIT]
END
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1. Sendov, Bl (1989) Education and Informatics: Strengthening International Cooperation, Theme 4: Applications, International Congress on Education and Informatics, UNESCO, Paris